

[illegible]

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A method for characterizing the performance of an electrostatic chuck prior to installing the chuck in the vacuum chamber of a semiconductor processing system in a production line. One or more characteristics of the electrostatic chuck are measured and compared with the known characteristics of a reference chuck. The comparison indicates the performance of the chuck and projects the performance of the chuck in an actual operating environment. The characteristics that are measured include the chuck impedance, the current-voltage characteristic of the chuck, the local plasma density proximate the support surface of the chuck, and the cooling or heating rate of the chuck.